

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

OKI AMERICA, INC., et al.,

No. C 04-03171 CRB

Plaintiffs,

MEMORANDUM AND ORDER

v.

ADVANCED MICRO DEVICES, INC.,

Defendant.

AND RELATED COUNTERCLAIMS

Now pending before the Court are (1) the motion of defendant Advanced Micro Devices (“AMD”) for partial summary judgment that asserted claims 1, 2 and 3 of U.S. Patent No. 5,739,571 (“the ‘571 patent”) and asserted claims 1, 3 and 4 of U.S. Patent No. 5,856,694 (“the ‘694 patent”) are invalid; and (2) the motion of plaintiff Oki America et al. (collectively “Oki”) for partial summary judgment of noninfringement of U.S. Patent No. 4,518,678 (“the ‘678 patent”).

BACKGROUND

This suit involves the alleged infringement of patents related to devices and methods for use in the semiconductor industry. Following a Markman hearing, this Court issued a Claim Construction Order construing certain terms in six patents, four of which still remain

in the case. Three of these patents, the Kurachi patents ('571 and '694 patents) and the Allen patent ('678 patent), are relevant to the partial summary judgment motions now before the Court.

DISCUSSION

I. Legal Standard for Summary Judgment

Summary judgment is proper when “the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law.” Fed. R. Civ. P. 56(c). An issue is “genuine” only if there is a sufficient evidentiary basis on which a reasonable fact finder could find for the non-moving party, and a dispute is “material” only if it could affect the outcome of the suit under governing law. See Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 248-49 (1986). “Where the record taken as a whole could not lead a rational trier of fact to find for the non-moving party, there is no ‘genuine issue for trial.’” Matsushita Elec. Indus. Co. v. Zenith Radio Corp., 475 U.S. 574, 587 (1986) (citation omitted).

A principal purpose of the summary judgment procedure “is to isolate and dispose of factually unsupported claims.” See Celotex Corp. v. Catrett, 477 U.S. 317, 323-24 (1986). A party moving for summary judgment that does not have the ultimate burden of persuasion at trial (in this case, plaintiff Oki, with respect to its motion for partial summary judgment of noninfringement) has the initial burden of producing evidence negating an essential element of the non-moving party’s claims or showing that the non-moving party does not have enough evidence of an essential element to carry its ultimate burden of persuasion at trial. See Nissan Fire & Marine Ins. Co. v. Fritz Cos., 210 F.3d 1099, 1102 (9th Cir. 2000). Where the party moving for summary judgment would bear the burden of proof at trial (here, defendant AMD, with respect to its motion for partial summary judgment of invalidity), it has the initial burden of producing evidence which would entitle it to a directed verdict if the evidence went uncontroverted at trial. See C.A.R. Transp. Brokerage Co. v. Darden Rests., Inc., 213 F.3d 474, 480 (9th Cir. 2000).

If the moving party does not satisfy its initial burden, the non-moving party has no obligation to produce anything and summary judgment must be denied. If, on the other hand, the moving party has satisfied its initial burden of production, then the non-moving party may not rest upon mere allegations or denials of the adverse party's evidence, but instead must produce admissible evidence that shows there is a genuine issue of material fact for trial. See Nissan Fire & Marine Ins. Co., 210 F.3d at 1102.

Summary judgment is appropriate in a patent case, as in any other case, where there is no genuine issue of material fact and the movant is entitled to judgment as a matter of law. Nike Inc. v. Wolverine World Wide, Inc., 43 F.3d 644, 646 (Fed. Cir. 1994) (citations omitted). To invalidate a patent, a moving party must overcome the presumption of validity that inheres in a patent by clear and convincing evidence. 35 U.S.C. § 282; United States Gypsum Co. v. National Gypsum Co., 74 F.3d 1209, 1212 (Fed. Cir. 1996). Determination of noninfringement is normally a fact-intensive issue, but comparison of a properly interpreted claim with a stipulated or uncontested description of an accused process would reflect such an absence of material fact as to warrant summary judgment of noninfringement. Norian Corp. v. Stryker Corp., 433 F. Supp. 2d 1051, 1053 (N.D. Cal. 2004) (citing D.M.I. Inc. v. Deere & Co., 755 F.2d 1570, 1573 (Fed. Cir. 1985)).

II. AMD's Motion for Partial Summary Judgment of Invalidity of the Kurachi Patents

A. Background

The Kurachi patents are entitled "Semiconductor Device Having Protection Device for Preventing the Electrostatic Breakdown of Output Buffer MOSFETs." '571 patent at [54]; '694 patent at [54]. The '694 patent is a continuation of the '571 patent. The specifications of the two patents are the same. These patents are directed to semiconductor devices having integrated circuits in which the output buffer circuitry¹ is protected from electrostatic discharges by a protection circuit.

¹The output buffer circuitry is the means by which signals are output from the semiconductor device (more colloquially, the "chip") to the rest of the electronic circuit.

1 The invention addresses the following shortcoming. The output buffer circuitry is
 2 comprised of buffer MOSFETs,² which are ordinarily subject to electrostatic breakdown in
 3 the event of an electrostatic discharge on the device. A discharge changes the electrical
 4 potential in the semiconductor device. Should the potential exceed a certain level in the
 5 vicinity of a MOSFET (such as the buffer MOSFETs), control over the potential of the
 6 transistor gate is lost and thus control over the circuit is lost. The discharge can also
 7 permanently damage the device.

8 The inventions disclosed in the Kurachi patents seek to prevent the problems caused
 9 by electrostatic discharges by including a protection circuit, comprised of protection
 10 MOSFETs, that is constructed and wired into the circuit in a particular manner so as to
 11 prevent a discharge from interfering with or damaging the buffer MOSFETs. One key
 12 structural feature of the protection circuit is recited as a limitation in claim 1 of each patent:
 13 “said buffer MOSFETs have impurity diffusion layers separated from said impurity diffusion
 14 layer of said protection MOSFETs by an interposed field oxide film.” ‘571 patent at 12:38-
 15 40; ‘694 patent at 12:39-41. Claim 1 in the ‘694 patent includes the further limitation
 16 “wherein each of said impurity diffusion layers of said buffer MOSFETs is separated from
 17 one of said impurity diffusion layers of said protection MOSFETs by at least 5 μ m.” ‘694
 18 patent at 12:42-45.

19 The claimed inventions also require, in dependent claims, that the protection circuit be
 20 operatively coupled “in parallel” with the buffer circuit between the device output terminal
 21 and either a ground terminal or a power source terminal. ‘571 patent at claims 2-3; ‘694
 22 patent at claims 3-4. By wiring the buffer circuit and the protection circuit in parallel, the
 23 protection circuit can act to shunt the potentially damaging voltage spike through this parallel
 24 pathway rather than the data-critical buffer circuit.

25
 26
 27 ²MOSFET stands for “metal oxide semiconductor field-effect transistor.” A transistor
 28 is an electrical component by which the flow of current in a circuit can be reversibly switched
 between an “on” state and an “off” state by controlling the potential of a “gate” within the
 transistor.

The Claim Construction Order issued by this Court construed the term “protection MOSFET” as “a MOSFET connected to a circuit in such a way that it tends to prevent one or more circuits from undergoing electrostatic breakdown.” Order, Feb. 14, 2006, at 10:17-18.

B. Summary of the Motion

AMD alleges that the asserted claims are anticipated by a report issued by the Integrated Circuit Engineering Corporation (“ICE”), No. SCA 9007-10, describing Toshiba’s TC140G27HS Gate Array (the “ICE Report”). AMD contends ICE published the Report in July, 1990, and that the Report discloses all of the elements of the asserted claims. Because the alleged date is more than one year prior to the earliest relevant filing date,³ the Report is potentially a prior art reference under 35 U.S.C. section 102(b). Oki responds that: (1) the ICE Report is inadmissible; (2) the ICE Report was not publicly accessible and therefore does not qualify as a reference under section 102(b) as a printed publication; and (3) in any event, the ICE Report does not anticipate all the elements of the asserted claims.

C. Discussion

1. Admissibility of the ICE Report

Oki first contends that the Court cannot consider the ICE Report because it is unauthenticated. See Orr v. Bank of America, 285 F.3d 764, 773 (9th Cir. 2002) (citing Fed. R. Civ. P. 56(e)) (holding that unauthenticated documents cannot be used in deciding a summary judgment motion); see also Panduit Corp. v. All States Plastic Mfg. Co., 744 F.2d 1564, 1575 (Fed. Cir. 1984) (holding that the law of the circuit in which a patent lawsuit was filed governs questions not peculiar to patent law), overruled on other grounds sub nom. Richardson-Merrell Inc. v. Koller, 472 U.S. 424 (1985); see also Liquid Dynamics Corp. v. Vaughan Co., 449 F.3d 1209, 1218 (Fed. Cir. 2006) (“Evidentiary rulings by the district court are reviewed under regional circuit law.”).

AMD properly authenticated the ICE Report under Federal Rule of Evidence Rule 902(11). That rule provides that “[t]he original or a duplicate of a domestic record of

³The ‘571 patent has a U.S. filing date of Aug. 24, 1995.

1 regularly conducted activity that would be admissible under Rule 803(6) if accompanied by a
 2 written declaration of its custodian or other qualified person . . . certifying that the record (A)
 3 was made at or near the time of the occurrence of the matters set forth by, or from
 4 information transmitted by, a person with knowledge of those matters; (B) was kept in the
 5 course of the regularly conducted activity; and (C) was made by the regularly conducted
 6 activity as a regular practice” is self-authenticating. Fed. R. Evid. 902(11). Once
 7 authenticated, the Report would qualify under Rule 803(6) as an exception to the hearsay rule
 8 in which a report or data compilation that is a record of a regularly conducted activity is
 9 allowed into evidence.

10 AMD offered Mr. Denboer, an employee at ICE during the time period when the
 11 Report was generated, to establish the Report’s admissibility. Mr. Denboer is qualified to
 12 provide a foundation as to the record-keeping procedures of ICE. He testified that during the
 13 relevant period, he managed the lab at ICE that analyzed semiconductor devices and
 14 produced the reports. In addition to supervising technicians working in the lab, he performed
 15 some of the analyses himself. Mr. Denboer also testified that he participated in the
 16 production of every report.

17 Mr. Denboer’s declaration also provides the information needed to meet the
 18 requirements for self-authentication of a record of regularly conducted activity. He declares
 19 that the ICE Report was (a) made at or near the time of the data collection and analysis of the
 20 Toshiba chip by, or from information transmitted by persons with knowledge of the
 21 analytical results; (b) kept in the course of the regularly conducted business activity of ICE;
 22 and (c) made by the regularly conducted activity of ICE as a regular practice.

23 Oki’s contention that the Report is inadmissible because Mr. Denboer does not have
 24 specific knowledge about exactly who produced it, and when they did the work, is wrong.
 25 See United States v. Ray, 930 F.2d 1368, 1370 (9th Cir. 1990). The “custodian or other
 26 qualified person” needed for authentication under Rule 902(11) “is broadly interpreted to
 27 require only that the witness understand the record-keeping system.” Id. (citations omitted).
 28 There is no requirement that the sponsoring party “establish when and by whom the

documents were prepared.” Id.; see also United States v. Arias-Villanueva, 998 F.2d 1491, 1503 (9th Cir. 1993) (holding that wire transfer documents were admissible even though foundational witness did not know who had prepared the particular document). Accordingly, the ICE Report is admissible as a properly authenticated business record and may be considered on this motion for partial summary judgment.

2. The ICE Report as a Printed Publication

An applicant loses its right to a patent if the invention was “described in a printed publication in this or a foreign country . . . more than one year prior to the date of the application for patent in the United States.” 35 U.S.C. § 102(b). Whether a printed publication is available as prior art, and whether it anticipates the invention, are two separate inquiries. Hodosh v. Block Drug Co., 786 F.2d 1136, 1142 (Fed. Cir. 1986). Determining whether a reference is a “printed publication” is a legal question based on the underlying facts. Norian Corp. v. Stryker Corp., 363 F.3d 1321, 1330 (Fed. Cir. 2004); In re Hall, 781 F.2d 897, 899 (Fed. Cir. 1986).

To prove that the ICE Report is a printed publication under section 102(b), AMD must show that (1) the Report was available prior to the critical date, and (2) the Report was sufficiently accessible, at least to those members of “the public interested in the art,” Hall, 781 F.2d at 899, that is, that persons interested and of ordinary skill in the art can locate the Report “exercising reasonable diligence.” Mass. Inst. of Tech. v. AB Fortia, 774 F.2d 1104, 1109 (Fed. Cir. 1985).

Mr. Denboer’s declaration establishes that the ICE Report was completed in July of 1990, prior to the critical date of the Kurachi patents. The parties’ primary dispute is whether the Report was “accessible.” The Court concludes that it was.

First, the record supports the conclusion that SCA reports,⁴ of which the ICE Report is one, are available for a particular chip if such an analysis was first requested by and sent to an interested company. See Constant v. Advanced Micro-Devices, Inc., 848 F.2d 1560, 1569

⁴SCA is an acronym for Shared Construction Analysis.

(Fed. Cir. 1988) (holding that evidence of routine business practice can be used to prove that a reference was accessible). The introductory page to the Report itself explains that the SCA is a program in which “custom reports done for an original requestor” are made available to everyone. There is no evidence in the record from which a reasonable trier of fact could find that the Report was not prepared at the request of an interested company.

Oki’s argument that the Report was confidential and therefore not publicly accessible is unavailing. Oki contends that the Report included confidentiality restrictions. Oki’s contention is based on statements made by ICE that ICE expected reports to be kept within the purchasing organization. There is, however, no evidence that the Report was subject to a confidentiality agreement beyond the copyright notice that appears on the Report. The record does include evidence that ICE expected that the contents of any report would be freely discussed, and that images could be used in public presentations, all of which is undisputed. In any event, even where portions of a report are labeled confidential, if the recipients are allowed to share the contents of a report with others, the report is considered “accessible,” and therefore a printed publication. Cooper Cameron Corp. v. Kvaerner Oilfield Products, Inc., 291 F.3d 1317, 1323-24 (Fed. Cir. 2002). Under this standard, the ICE Report sent to the original requestor was “accessible,” and therefore qualifies as a printed publication.

The Report was accessible for a second reason. Once prepared, all SCA reports were listed and advertised for sale in a newsletter sent out quarterly by ICE as a standard practice of the business. The newsletter was typically mailed to 500-1000 persons. The newsletters listed each report by SCA number, title (usually the chip manufacturer and model number), and price. ICE’s mailing list included the major semiconductor companies. The mailing list was constructed from, for example, those who attended ICE seminars, purchased a report, or responded to a direct mail campaign. By virtue of their seeking out ICE’s services, they are members of the public interested in the art. A catalog of reports available for sale to anyone and advertised directly to the interested public meets the requirements for public accessibility. See Mass. Inst. of Tech., 774 F.2d at 1109; see also Jockmus v. Leviton, 28 F.2d 812, 813 (2d Cir. 1928).

The affirmative evidence of inaccessibility presented by Oki does not raise a genuine issue as to any material fact. Whether the printed publication is stored and/or indexed in a library is irrelevant. See Bruckelmyer v. Ground Heaters, Inc., 445 F.3d 1374, 1378-79 (Fed. Cir. 2006) (holding that figures within the prosecution history file in the Canadian patent office but not part of the issued patent were publicly accessible and thus a printed publication); In re Klopfenstein, 380 F.3d 1345, 1347 (Fed. Cir. 2004) (pasting a printed slide presentation onto poster board and displaying at a conference for several days was a printed publication); Cooper Cameron, 291 F.3d at 1323-24 (distributing task reports to participants in a joint venture constituted a printed publication). Oki also cites no support for its assertion that the cost of the ICE Report rendered it inaccessible, or that price is a relevant factor in determining accessibility. The shortcomings in Oki's assertions regarding confidentiality restrictions, already discussed in the context of the original report, apply equally to the ICE Report as made available to the public in the SCA program.

Oki's emphasis on the lack of proof of actual dissemination is misplaced. There is no requirement that anyone ever access a reference; it is sufficient that they be able to do so. Constant, 848 F.2d at 1569 ("If accessibility is proved, there is no requirement to show that particular members of the public actually received the information."). So long as one exercising reasonable diligence is able to access a reference, Mass. Inst. of Tech., 774 F.2d at 1109, that reference is considered "sufficiently accessible, at least to the public interested in the art." Hall, 781 F.2d at 899. The undisputed evidence as to the distribution of the ICE Report to the original requestor, and its subsequent availability to the major corporations in the semiconductor industry, compels the conclusion that the Report is a printed publication.

3. The ICE Report as an Anticipating Reference

A claimed invention is anticipated, and therefore not novel, if each and every element of the claim is disclosed in a single prior art reference. In re Paulson, 30 F.3d 1475, 1478-79 (Fed. Cir. 1994). The elements must be expressly disclosed, inherent in the disclosure, or within the knowledge of those of skill in the relevant art. Constant, 848 F.2d at 1562. There must be identity between the claimed invention and the reference, as viewed by one of

ordinary skill in the art. Scripps Clinic & Research Found. v. Genentech, Inc., 927 F.2d 1565, 1576 (Fed. Cir. 1991). Conversely, if the reference lacks any of the claimed elements, then it does not anticipate. Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 1571 (Fed. Cir. 1986).

In deciding the question of anticipation, the court must identify the elements of the claims, construe their meanings according to the canons of claim construction, and compare these with the corresponding elements disclosed in the reference. In construing the claims, it is impermissible to read in limitations from the specification, particularly the preferred embodiments, to thereby avoid anticipation by a reference. Smith v. Hall, 301 U.S. 216, 232 (1937). However, it is proper to interpret what the claim language means by the understanding gained from the specification as to the import of the invention. See Innova/Pure Water, Inc. v. Safari Water Filtration Sys. Inc., 381 F.3d 1111, 1116 (Fed. Cir. 2004) (“The written description provides a context for the claims”).

Whether the ICE Report anticipates the claimed inventions turns on a comparison of the contents of the Report with (i) the limitation “said buffer MOSFETs having impurity diffusion layers separated from said impurity diffusion layers of said protection MOSFETs by an interposed field oxide film,” as recited in claim 1 of the ‘571 patent; and (ii) that same limitation as modified by the language “wherein each of said impurity diffusion layers of said buffer MOSFETs is separated from one of said impurity diffusion layers of said protection MOSFETs by at least 5 m,” as recited in claim 1 of the ‘694 patent. Resolving the motion for partial summary judgment requires the Court to now construe the above-quoted passages.

In performing the following the claim construction, the Court incorporates the statements of law set forth in the Claim Construction Order, issued Feb. 14, 2006.

i. Claim Construction of “interposed field oxide film”

The plain meaning of the claim language common to both patents is that a field oxide film is interposed between and separates the impurity diffusion layers associated with the buffer MOSFETs from the impurity diffusion layers associated with the protection MOSFETs. The buffer MOSFETs are those that are part of the output buffer circuit. The

1 protection MOSFETs are those that are part of a protection circuit provided to protect the
2 above-mentioned output buffer circuit. Taken as a whole, the structural and functional
3 relationships among the elements as required by the plain meaning are apparent: protection
4 MOSFETs are part of the protection circuit that functions to protect an output buffer circuit,
5 and the impurity diffusion layers of the protection MOSFETs must be separated from, and
6 have a field oxide film interposed between, the impurity diffusion layers of buffer MOSFETs
7 that are part of said output buffer circuit.

8 The claims make no express qualifications as to whether “any,” “at least one,”
9 “some,” “most,” or “all” of the various MOSFETs are the subject of the claims. The plain
10 meaning, however, is that all of the MOSFETs comprising the respective circuits are subject
11 to the limitations. The claim language provides that the set of buffer MOSFETs are
12 separated from the set of protection MOSFETs by an interposed oxide film; the plain
13 language does not permit an interpretation that some within the set might not be separated,
14 notwithstanding the open claim language introduced by the term “comprising” in the claim
15 preamble.

16 The specifications of the patents further support the Court’s construction. The title
17 and field of the invention inform the reader that the aim of the invention is to provide a
18 “protection device” or “protection elements” for preventing the electrostatic breakdown of
19 output buffer MOSFETs. ‘571 patent at [54], 1:9-12. The patentee notes that a device
20 having buffer MOSFETs and offset gate MOSFETs (for the prevention of electrostatic
21 breakdown), wired in parallel, were known in the prior art. Id. at 1:14-30. Because these
22 prior art devices were still subject to electrostatic breakdown, the purpose of the invention is
23 to provide improved circuitry “capable of more effectively preventing . . . electrostatic
24 breakdown.” Id. at 1: 38-40.

25 The specification implies that at least one improvement over the prior art included
26 separating the protection elements from the buffer elements. The specification describes this
27 in detail:

When the electrostatic discharge flows into the channels and the semiconductor substrate 12 near the channels, a potential at the semiconductor substrate is raised. Since, however, each of the impurity diffusion layers 18 of the buffer MOSs [sic] 14 and 14' and each of the impurity diffusion layers 20 of the protection elements 16 are separated from one another by the semiconductor substrate 12 and the field oxide film 44 as mentioned above, the resistance between the impurity diffusion layers 18 and 20 increases. Thus, since a voltage drop is developed by the resistance, the potential at each of the channels of the buffer MOSs 14 and 14' and the potential at the semiconductor substrate 12 provided near the channels can be prevented from increasing or being reduced. As a result, the drain withstand voltages BV_{sd} of the buffer MOSs 14 and 14' are little reduced, thereby making it possible to prevent snapback of each of the buffer MOSs 14 and 14'.

'571 patent at 6:35-52. Thus, the specification explains that the underlying cause of electrostatic breakdown in the devices is due to the lack of a sufficiently resistive medium between the respective MOSFETs, that is, it is a consequence of the chip construction and layout.

The layout of the device of the invention is described as "the impurity diffusion layers 18 of each buffer MOS 14 and the impurity diffusion layers 20 of each protection element 16 are respectively separated from one another and disposed so as to be spaced away from one another. This is because the substrate 12 and the field oxide film 44 are interposed between the impurity diffusion layers 18 and 20." *Id.* at 6:4-10 (emphasis added). All the embodiments described in the specification adopt a similar physical separation between the respective sets of buffer and protection MOSFETs.⁵

The drawings reinforce the understanding derived from the description. Figures 3, 4 and 6 are particularly instructive. These figures illustrate a plan view of a device according to various embodiments of the invention. As shown, each group of MOSFETs are prepared within its own "window" in the field oxide film. The window openings in the film, labeled 44a, 44b and 44c, are drawn with a dotted line around each MOSFET group. The arrow markers t1 and t2 further indicate the spacing between the buffer and protection elements. Even though the specification remarks that the intervals t1 and t2 "may preferably be set as

⁵The specification enumerates six embodiments, and proceeds to describe only those features that differ from the previously described embodiments. Nothing in the specification contradicts the concept that the buffer and protection elements have a field oxide film interposed between each element as a set.

short as possible,” id. at 6:62-63, this language falls short of permitting the interval to be nonexistent. Therefore, buffer and protection elements having no interposed oxide film is not permitted within the scope of the claims.

The prosecution history of the ‘571 patent also supports the interpretation derived from the plain meaning of the claim language. In the response to the first office action, the patentee describes the “present invention,” as a prelude to addressing the substantive rejections, as follows: “The buffer MOSFETs have impurity diffusion layers (18) which are spaced from impurity diffusion layers (20) of the protection MOSFETs. A field oxide film separates the buffer MOSFETs from the protection MOSFETs. This arrangement of semiconductor device (10) prevents electrostatic breakdown of each buffer type.” Response to Office Action, Dec. 13, 1996, at 18. The patentee uses similar language to distinguish the claimed invention from a reference applied under section 103 for obviousness. The patentee explains that the reference does not “disclose that the impurity diffusion layers of the buffer MOSFETs are spaced from the impurity diffusion layers of the protection MOSFETs, and that a field oxide film is disposed between the buffer MOSFETs and the protection MOSFETs.” Id. at 18-19. The patentee consistently characterized the invention as having the set of buffer MOSFETs separated from the set of protection MOSFETs.

The Court thus concludes that the limitation “said buffer MOSFETs having impurity diffusion layers separated from said impurity diffusion layers of said protection MOSFETs by an interposed field oxide film” requires that all impurity diffusion layers of the protection MOSFETs be separated by an interposed field oxide film from the impurity diffusion layers of the buffer MOSFETs that the protection MOSFETs serve to protect.

ii. Claim Construction of “by at least 5 m”

Of the two Kurachi patents, only the ‘694 patent recites the limitation “wherein each of said impurity diffusion layers of said buffer MOSFETs is separated from one of said impurity diffusion layers of said protection MOSFETs by at least 5 m.” ‘694 patent at claim 1.

The “by at least 5 m” limitation is a “wherein” clause that further defines the scope

1 of the claim with respect to “said impurity diffusion layers” of both the buffer MOSFETs and
 2 the protection MOSFETs. Therefore, the interpretation of the clause must be made in view
 3 of the previous limitations already introduced for all the elements involved. See Lindemann
 4 Maschinenfabrik GmbH v. American Hoist and Derrick Co., 730 F.2d 1452, 1459 (Fed. Cir.
 5 1984) (holding that claims are not to be treated as “mere catalogs of separate parts, in
 6 disregard of the part-to-part relationships set forth in the claims and that give the claims their
 7 meaning”) .

8 In its Supplemental Reply, AMD sets forth two arguments in support of its claim
 9 interpretation. The first is that the key word in this limitation is “one,” which means “‘one’
 10 rather than ‘all’ or ‘every.’” Suppl. Reply Br. at 31. AMD contends that this limitation
 11 simply requires that each buffer MOSFET impurity diffusion layer be separated by the
 12 recited distance from any one of the impurity diffusion layers of the protection MOSFETs;
 13 therefore the 5 m limitation can be satisfied by any random pair of buffer and protection
 14 MOSFETs on the chip. So long as one pair of impurity diffusion layers are sufficiently
 15 separated, any other pair need not meet this limitation, that is, other pairs may be more
 16 closely spaced, including there being no separation.

17 AMD also contends that the “open” format of the independent claim (the claim
 18 elements are introduced using the word “comprising”) permits the addition of extra elements.
 19 According to this alternative construction, impurity diffusion layers that lie within 5 m of
 20 another are such “extra elements.” Instead of bringing the device outside the claim scope,
 21 devices with impurity diffusion layers of protection and buffer MOSFETs within 5 m of
 22 one another fall within the scope of the claim by virtue of the open claim language, provided
 23 at least one buffer MOSFET is separated by at least 5 m from one protection MOSFET.

24 In contrast, Oki contends that “each buffer MOSFET impurity diffusion layer must be
 25 separated from any one of the diffusion layers in each of the protection MOSFETs” by the
 26 recited distance. Suppl. Opp. Br. at 20-21. More simply, the minimum separation between
 27 each buffer MOSFET impurity diffusion layer and any protection MOSFET impurity
 28 diffusion layer must be at least 5 m.

1 The plain meaning of the claim adheres to neither of these proposed constructions.
 2 First, as noted above, the interpretation of this limitation must be consistent with the other
 3 limitations of the claim. AMD's construction would negate the "interposed field oxide film"
 4 limitation because it would allow for no separation between the impurity diffusion layers at
 5 issue. Oki's interpretation, that a 5 m separation is required as a minimum separation
 6 between all relevant diffusion layers, does not negate the earlier limitation, but the plain
 7 meaning of the limitation is not so restrictive.

8 The plain meaning of the claim does not preclude a smaller separation distance from a
 9 second impurity diffusion layer. "One" means one. The claim does not read, for example,
 10 that "each of said impurity diffusion layers of said buffer MOSFETs is separated from the
 11 nearest one of said impurity diffusion layers," which implies a claim scope closer to that
 12 advanced by Oki. The claim calls for no more than that one of said impurity diffusion layers
 13 of the protection MOSFETs is separated, by the requisite distance, from each of the impurity
 14 diffusion layers of those buffer MOSFETs.

15 The specification of the '694 patent is not inconsistent with the plain meaning inferred
 16 from the claim language. As stated earlier, one of the thrusts of the invention is the
 17 separation of the impurity diffusion layers from one another. This general idea is manifested
 18 in the "field oxide film" limitation. The more specific limitation regarding the separation
 19 distance ("interval") between impurity diffusion layers is only addressed in a short passage in
 20 the specification. See '694 patent at 6:55-67. Referring to Fig. 3, the specification teaches
 21 that, with respect to the distances between the diffusion layers of two different buffer
 22 MOSFETs and the diffusion layers of a protection MOSFET, "each of the intervals t1 and t2
 23 may preferably be set to at least 5 m." Id. at 6:60-61. This passage teaches that the
 24 individual intervals may differ from one another. The specification continues by stating that
 25 each interval may be "set as short as possible," demonstrating that shorter distances were
 26 contemplated by the patentee. Id. at 6:65.

27 The prosecution history suggests that the patentee intended to claim the more
 28 restrictive interpretation, but it does not establish that such a restrictive interpretation was

1 actually claimed as the invention. The claim originally recited “wherein said impurity
 2 diffusion layers of said buffer MOSFETs are separated from said impurity diffusion layers of
 3 said protection MOSFETs by at least 5 m.” Prelim. Amd., June 24, 1996, at 10. Upon
 4 rejection in the first office action under section 112, ¶ 2 for indefiniteness, the patentee
 5 amended the claim by inserting “all of” before each instance of “impurity diffusion layers.”
 6 Response to Office Action, May 15, 1998, at 4. The claim was allowed, but an Examiner’s
 7 Amendment, consented to by the patentee, changed the language to its issued form, that is, to
 8 using the phrase “separated from one” rather than “separated from all of.”

9 The record does not reveal whether the Examiner’s amendment was entered as a
 10 condition for allowance or to clarify an ambiguity. In any event, the patentee had the
 11 opportunity to first comment on the Examiner’s amendment, and then to correct the language
 12 via either a certificate of correction or through a reissue proceeding if it was not satisfied
 13 with the claim. The patentee did not pursue these options.

14 Claim construction cannot turn on the subjective intent of a patentee. Markman v.
 15 Westview Instruments, Inc., 52 F.3d 967, 985 (Fed. Cir. 1995) (en banc), aff’d, 517 U.S. 370,
 16 372 (1996). The court “must construe the claims based on the patentee’s version of the claim
 17 as he himself drafted it.” Process Control Corp. v. HydReclaim Corp., 190 F.3d 1350, 1356-
 18 57 (Fed. Cir. 1999). The Court is not now to “interpret the claim differently just to cure a
 19 drafting error.” Hoganas AB v. Dresser Indus., Inc., 9 F.3d 948, 951 (Fed. Cir. 1993). To
 20 revive the meaning of the claim prior to the amendment would be to interfere with the
 21 function of claims, which is to put competitors on notice of what the inventor considers to be
 22 their invention. Id.

23 The Court thus concludes that the limitation “wherein each of said impurity diffusion
 24 layers of said buffer MOSFETs is separated from one of said impurity diffusion layers of
 25 said protection MOSFETs by at least 5 m” requires that one of said separation distances be
 26 at least 5 m, but that in no case should a field oxide film not be interposed between the
 27 impurity diffusion layers of buffer MOSFETs and protection MOSFETs, as required by the
 28 “interposed field oxide film” limitation.

1 **iii. Comparison of the Construed Claims with the ICE Report**
2 **Reference**

3 At oral argument, AMD conceded that if all the impurity diffusion layers of the
4 protection and buffer MOSFETs, respectively, must be separated from one another, then the
5 claims do not read on the ICE Report. Based on the Court's construction that the respective
6 impurity diffusion layers must be separated by a field oxide film, the Court concludes, as
7 AMD concedes, that the ICE Report does not anticipate the invention, and therefore does not
8 invalidate the asserted claims.

9 **III. Oki's Motion for Partial Summary Judgment of Noninfringement**

10 **A. Background**

11 The Allen patent is entitled "Selective Removal of Coating Material on a Coated
12 Substrate." '678 patent at [54]. AMD is the assignee. Id. at [73]. The patent is directed to
13 an improvement in the process for producing semiconductor devices comprising the selective
14 removal of coatings from the periphery of a wafer to "mitigate[] the inadvertent
15 dislodgement of coating particles from the peripheral portion of the substrate during
16 subsequent processing." Id. at [57].

17 In the semiconductor industry, many devices are fabricated at once on large, circular
18 semiconductor substrates referred to as wafers. The typical wafer size is at least several
19 inches in diameter, whereas each device is just fractions of an inch. The large wafer size
20 permits easy handling, increases throughput, and improves the uniformity of the end product.
21 To complete the device manufacture, the individual devices are cut apart ("diced"), and the
22 excess portions of the original wafer, notably the peripheral portions, are simply discarded.

23 One step frequently performed in the fabrication process involves spreading a thin
24 film of liquid over the wafer surface, followed by, for example, hardening the film, exposing
25 the film to a light pattern, and selectively washing away either the exposed or the unexposed
26 portions of the film. The liquid, generally referred to as a "photoresist," is spread over the
27 wafer by dropping it onto the wafer center while spinning the wafer. The centrifugal forces
28 spread the liquid across the wafer towards the edge. The photoresist accumulates, however,

1 at the side edge and on the lower surface. Once hardened into a coating, these portions are
 2 subject to breaking off as fine particles during subsequent handling operations. Debris of
 3 this sort can interfere with device fabrication and lead to defects. See '678 patent at 1:13-63.

4 The Allen invention addresses these shortcomings by providing processes for
 5 removing the photoresist from the edge of the wafer in order to circumvent debris formation
 6 due to the film at the periphery (collectively, the "Allen process"). See id. at 1:65 – 2:34.

7 AMD accuses Oki of infringing independent claim 5 of the Allen patent. In
 8 particular, AMD alleges that Oki infringes under 35 U.S.C. section 271(g) because
 9 semiconductor chips OKI makes overseas and imports into the United States are "made by"
 10 the Allen process.

11 **B. Summary of the Motion**

12 Oki moves for partial summary judgment of noninfringement of claim 5 of the Allen
 13 patent. For the purposes of this motion, Oki admits that it practices the claimed Allen
 14 process. What is disputed, and what Oki denies, is that actions overseas are infringing under
 15 section 271(g). Oki asserts that summary judgment in its favor is proper because: (i) chips
 16 imported into the United States are not "made by" the Allen process, and, even if they are,
 17 (ii) the chips underwent "material change by subsequent processes," or (iii) the product of the
 18 process—clean wafer edges—is a "trivial or nonessential component" of the imported chips.

19 **C. Discussion**

20 Section 271(g) reads in pertinent part:

21 Whoever without authority imports into the United States or offers to sell, sells, or
 22 uses within the United States a product which is made by a process patented in the
 23 United States shall be liable as an infringer A product which is made by a
 24 patented process will, for purposes of this title, not be considered to be so made after
 (1) it is materially changed by subsequent processes; or (2) it becomes a trivial and
 nonessential component of another product.

25 35 U.S.C. § 271(g).

26 The statute only applies to "a product which is made by a process patented in the
 27 United States." The statute provides no specific guidance as to what is meant by "made by" a
 28

1 patented process; and, furthermore it provides no specific guidance about the scope of the
 2 exceptions to the rule.⁶ Accordingly, courts must make such determinations on a case-by-
 3 case basis. See Bio-Technology General Corp. v. Genentech, Inc., 80 F.3d 1553, 1561 (Fed.
 4 Cir. 1996) (noting that the statute lacks specificity apparently because Congress wanted the
 5 courts to resolve the critical question of proximity on a case-by-case basis).

6 To determine if the product of the process is subsequently “materially changed,”
 7 courts look “to the substantiality of the change between the product of the patented process
 8 and the product being imported.” Eli Lilly and Co. v. American Cyanamid Co., 82 F.3d
 9 1568, 1572 (Fed. Cir. 1996). What is required, at a minimum, is “a real difference between
 10 the product imported . . . and the products produced by the patented process.” Bio-
 11 Technology General Corp., 80 F.3d at 1560. Whether the product is a “trivial and
 12 nonessential component” of another product is “necessarily a question of degree” that also
 13 requires close attention to the facts. Eli Lilly, 82 F.3d at 1572.

14 It is undisputed that the Allen process acts on material at the edge region, whereas the
 15 devices are fabricated at the interior region, of a semiconductor wafer. It is also undisputed
 16 that the edges of a wafer are discarded at the end of the fabrication process and do not
 17 become part of the product devices. Beyond these facts there is little agreement between the
 18 parties.

19 **1. Product of the patented process**

20 The first step in the analysis is to determine what is the product of the patented
 21 process. See NTP, Inc. v. Research in Motion, Ltd., 418 F.3d 1282, 1323 (Fed. Cir. 2005)
 22 (determining initially, as a matter of law, whether the product was email packets that have
 23 physical structure, or the transmission of information in the form of email messages). Oki

24
 25 ⁶The legislative history of the Process Patent Amendment Act of 1988, Omnibus Trade
 26 and Competitiveness Act of 1988, P.L. 100-418 (Title IX, Subtitle A, Sections 9001-07), 102
 27 Stat. 1563, includes a House report, Senate report and a conference report that provide examples
 28 of what was and was not intended to be covered by the statute. Courts have found the reports
 suggestive though not dispositive. See, e.g., Eli Lilly and Co. v. American Cyanamid Co., 82
 F.3d 1568, 1573 (Fed. Cir. 1996); see also 5 Donald S. Chisum, Chisum on Patents §
 16.02[6][d][iv][B] (2006) (noting that court decisions differ on what weight should be given to
 specific statements in the legislative history).

1 argues that the product of the claimed process is “a clean wafer edge,” Reply Br. at 1, or at
 2 most, “a wafer coated with photoresist but having a clean edge,” *id.* at 2. AMD counters that
 3 the product is instead “the contaminant free chips on the [wafer] substrate.” Opp. Br. at 8.

4 The Court concludes that the product of the process is a device lacking certain debris.
 5 The nature of the invention is an improvement in “the process for the production of a
 6 plurality of semiconductor devices.” ‘678 patent, at [57]. On a broader level, the patent is
 7 directed to the improved production of devices. The background provided in the
 8 specification clearly discloses the motivation for the invention and the problem intended to
 9 be solved. *Id.* at 1:12-63. The patent teaches:

10 A number of such foreign particles on a substrate may therefore result in a serious
 11 decrease in the yield from the wafer or substrate. . . . Microscopic examination of the
 12 uneven surfaces of the loose particles of photoresist coating . . . indicate that one
 13 source of such particles is apparently the end edges of the substrate. It has been
 14 surmised that the presence of these particles is the result of handling of the substrates
 15 during processing which may result in the dislodgment or flaking off of the coating
 16 adjacent the periphery of the coated substrate with at least some of the dislodged
 17 particles becoming inadvertently scattered over the remainder of the coated substrate
 18 resulting in eventual defects.

17 *Id.* at 1:33-63. This teaching supports the Court’s conclusion.

18 With the threshold question determined, the elements of section 271(g) can be
 19 examined. The Court must first determine whether the imported product is “made by” the
 20 patented process, and then examine whether the exceptions to the statute apply.

21 2. “Made by” the patented process

22 To be considered “made by a process patented in the United States,” the patented
 23 process must be used directly in the manufacture of the imported product, and not merely as a
 24 predicate process to identify the product to be manufactured. Bayer AG v. Housey
 25 Pharmaceuticals Inc., 340 F.3d 1367, 1378 (Fed. Cir. 2003); accord Classen
 26 Immunotherapies, Inc. v. King Pharmaceuticals, Inc., 403 F. Supp. 2d 451, 455 (D. Md.
 27 2005). The imported products are operational semiconductor devices. The patented process
 28 produces wafers with reduced debris and presumably fewer defects in the chips on those

1 wafers. These chips are diced and packaged up to become the devices. The Court concludes
 2 that the devices containing the chips diced from the wafer are directly derived from the wafer
 3 processing steps and therefore are “made by” the Allen process.

4 Oki’s reliance on Housey for the proposition that the process must be performed on
 5 the material that ultimately is a physical part of the imported item is misplaced. In Housey,
 6 the predicate process generated data useful as a means to identify the product to be
 7 manufactured, it was not in any way part of the manufacturing process itself. 340 F.3d at
 8 1378. Here, although the Allen process directly affects only the wafer edges, which are
 9 ultimately discarded, it is nonetheless a process step in the manufacture of the chip; it is not a
 10 process to identify the product to be manufactured as in Housey. Furthermore, cleaning the
 11 wafer edges is not too remote a process from the manufacture of operational devices because
 12 it was explicitly contemplated that the patented process would be used as part of the overall
 13 device manufacture. See Bio-Technology General Corp. v. Genentech, Inc., 80 F.3d 1553,
 14 1561 (Fed. Cir. 1996) (holding that production of a protein by a host organism expressing an
 15 inserted plasmid was a product “made by” the patented process for creating the plasmid
 16 itself).

17 3. “Made by” exceptions

18 Neither of the section 271(g) exceptions apply. The product of the Allen process is
 19 not “materially changed by subsequent processing.” 35 U.S.C. § 271(g). Oki primarily
 20 argues that the product, cleaned wafer edges, is not directly involved in the fabrication of a
 21 device. Oki also argues that the numerous other wafer processing steps (mask placement,
 22 photolithography, resist development and removal, dicing, encapsulation) required for
 23 fabrication would anyway constitute a material change.

24 As stated above, however, the product is a device lacking certain debris, and this
 25 aspect of the product remains unchanged by any subsequent processing. The Allen process is
 26 not solely responsible for producing a device lacking debris, but that does not mean the
 27 process does not contribute to this outcome. The subsequent processing steps, such as
 28 photolithography, resist development and removal, dicing, and encapsulation, do of course

1 make material changes to the physical and electrical properties of the semiconductor
2 substrate, but these changes do not impact the product of Allen process, a debris-free device.

3 Nor does the product of the patented process, namely, a debris-free device, become a
4 “trivial or nonessential component of another product.” 35 U.S.C. § 271(g) (emphasis
5 added). The product of the process is a chip lacking certain debris, and an operational chip is
6 the functional heart of an integrated circuit device; the product therefore is not “trivial or
7 nonessential.” Moreover, the chip lacking certain debris, that is, an operational chip, is itself
8 the product; it is not a component of “another product.” Oki has not proven that either
9 exception applies as a matter of law.


10 CONCLUSION

11 For the reasons stated, the Court rules as follows:

- 12 1. AMD’s motion for partial summary judgment of invalidity is DENIED because
- 13 the claims, as construed herein, do not read on the ICE Report.
- 14 2. Oki’s motion for partial summary judgment of noninfringement is DENIED
- 15 because the imported products qualify as a product made by the patented
- 16 process under 35 U.S.C. section 271(g).

17 **IT IS SO ORDERED.**

19 Dated: September 21, 2006


 CHARLES R. BREYER
 UNITED STATES DISTRICT JUDGE